Catalyst 2820 Series — Modular Ethernet Switches

Product Overview

The modular Catalyst 2820 series switches are the ideal solution for Ethernet workgroups and individual users who need increased performance at a surprisingly affordable price, and 100BaseT, Fiber Distributed Data Interface (FDDI), or Asynchronous Transfer Mode (ATM) connectivity to servers and network backbones.

A Catalyst 2820 series Standard Edition switch is an effective backbone in a small/medium business network, aggregating 10BaseT hubs and network resources, or used at the workgroup level in a large network for dedicated, high speed connections from individual desktops to servers and other network devices.

All Catalyst 2820 series switches offer unrivaled ease of use through an intuitive and comprehensive Web-based management interface. Standard Edition switches are upgradable to provide unmatched flexibility and scalability when combined with Enterprise Edition software. Enterprise Edition software enables these switches to deliver comprehensive management and security, bandwidth optimization, networked multimedia, and virtual LAN (VLAN) support.Enterprise Edition software enables these switches to deliver unmatched network configuration flexibility and scalability through embedded Cisco technologies, delivering comprehensive management and security, bandwidth optimization, networked multimedia, and virtual LAN (VLAN) support. The Enterprise Edition software is pre-installed in Enterprise Edition switches, and available as an Upgrade Kit for Standard Edition switches.

Key Features and Benefits

Standard Edition Feature Summary

- Software upgradable to Enterprise Edition
- 4 models with 24 10BaseT ports, two slots, and choice of 2K or 8K MAC address cache
- Choice of 11 high-speed modules support 100BaseT, FDDI, and ATM
- Full-duplex operation on all ports
- Web-based network interface enables configuration and management form any client on the internet with a web-browser.
- Congestion control features including IEEE 802.3x-based flow control, and back-pressure based flow control on 10BaseT ports

Performance

- Twelve or twenty-four 10BaseT ports deliver dedicated 10 Mbps of bandwidth to individual users or workgroups to support bandwidth-intensive applications
- Two high-speed expansion slots maximize high-speed configuration and backbone flexibility
- One switched Attachment Unit Interface (AUI) port for connecting to fiber or legacy 10Base2 or 10Base5 networks
- Shared-memory architecture with 3 MB packet buffer virtually eliminates packet loss
- Non-blocking, ClearChannel architecture supports wire-speed bridging on all ports, delivering up to 370 Mbps maximum forwarding bandwidth, and 550,000 pps aggregate
- CollisionFree full-duplex operation on switched 10BaseT and 100BaseT ports delivers up to 200 Mbps of bandwidth to end stations, servers and between switches
- Choice of congestion control options for applications that require zero packet loss:
- Enhanced congestion control accelerates packet forwarding when the switch buffers are full
- Back-pressure on half-duplex Ethernet ports throttles network transmission using the IEEE 802.3 Layer 2 back-off algorithm
- IEEE 802.3x flow control on 100BaseTX ports provides intelligent flow management between switches and between a switch and a server

- Per-port broadcast storm control prevents faulty end stations from degrading overall system performance with broadcast storms
- Choice of cut-through or store-and-forward switching lets administrators optimize for performance or error checking

Security and Redundancy

- IEEE 802.1d Spanning-Tree Protocol support for redundant backbone connections and loop-free networks simplifies network configuration and improves fault tolerance
- TACACS+ enables designation of a separate access server for authentication, authorization, and accounting (Enterprise Edition only)
- User-selectable address learning mode simplifies configuration and enhances security
- Resilient link support for faster recovery from network failures

Scalability

- Fast EtherChannel provides up to 400 Mbps of bandwidth to switches, routers, and servers by enabling parallel bandwidth links between switches (with Enterprise Edition software).
- Cisco Group Management Protocol (CGMP) enables a switch to selectively and dynamically filter and forward routed IP multicasts to targeted multimedia end stations, optimizing bandwidth for applications such as Intranet, video-conferencing and IPTV.
- Overlapping bridge groups control broadcasts within the switch to manage bandwidth and provide added security.
- Broadcast control for end stations with up to 1024 administrator-defined, port-based VLANs. VLANs can be distributed across multiple switches with Cisco's dynamic Inter-Switch Link (ISL) trunking on 100BaseT ports (with Enterprise Edition software).
- Support for optional Cisco 600 watt redundant AC power system provides a backup power source for up to four units for improved fault tolerance and network uptime.

Flexible Network Configuration

- No per-port Media Access Control (MAC) address limitations — provides flexibility to connect to individual users or shared hubs. Support for 1024 MAC addresses on Catalyst 1900 and up to 8192 addresses on Catalyst 2820. Allows switch to scale with a growing network
- Configurable network port that supports unlimited MAC addresses for backbone connectivity

Management

- Web-based secured interface allows user to configure and manage the switch from any client on the internet with a web-browser
- Simple Network Management Protocol (SNMP) and Telnet support delivers comprehensive in-band manageability, and a menu-based management console provides out-of-band manageability
- Supports four groups of embedded RMON (history, statistics, alarms, and events). Support for all nine RMON groups through use of a SwitchProbe Analyzer port that permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe. (Enterprise Edition only)
- Cisco Discovery Protocol (CDP) enables a CiscoWorks network management station to automatically discover the switch in a network topology
- Autonegotiation on 100BaseTX ports automatically selects half- or full-duplex transmission mode to optimize bandwidth
- Domain Name Service (DNS) eases network administration by enabling logical name assignments. Network Administrators can specify an end system or Catalyst 1900/2820 by name, rather than address.
- Dynamic Host Configuration Protocol (DHCP) support eases network administration by automatically requesting an IP address from any network DHCP server.

Figure 16-17: Catalyst 2820 Series Front View

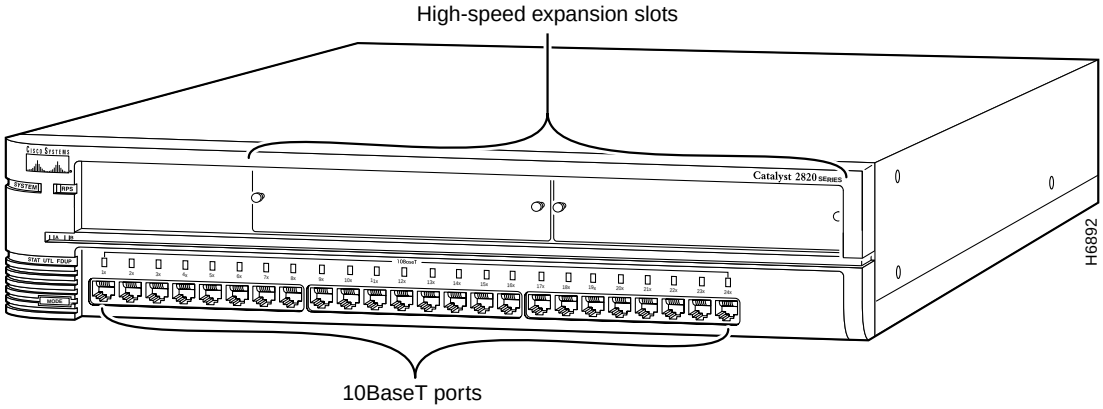
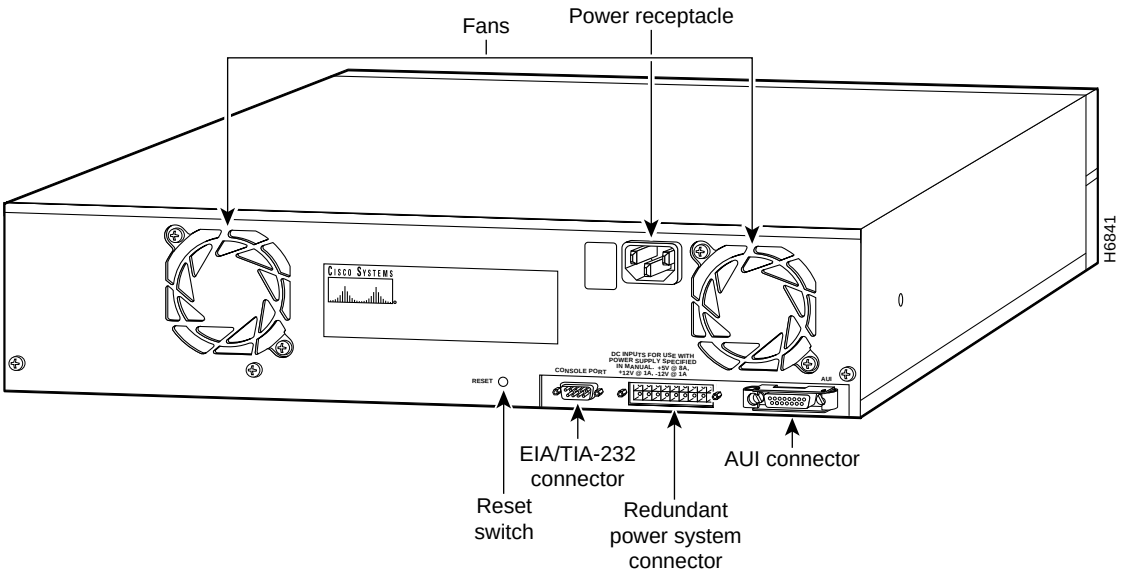


Figure 16-18: Catalyst 2820 Series Rear View



Specifications

Hardware

Table 16-20: Catalyst 2820 Specifications

Characteristic	Description
Performance	1 Gbps bus 370 Mbps maximum forwarding bandwidth 3 MB packet buffer memory dynamically shared by all ports
Selectable switching option:	FragmentFree cut-through-forward after collision window (64 bytes) Store and forward — forward after packet receipt Full/half duplex operation by port
Packet forwarding rate for 64-byte packets:	14,880 packets per second (pps) to 10 Mbps ports 148,800 pps to 100BaseT module ports Up to 100,000 pps to FDDI module ports Up to 550,500 pps aggregate
Latency (FragmentFree cut-through switching mode):	70 microseconds between 10BaseT ports 11 microseconds between 100BaseT ports
MAC addresses:	1024 per system (Catalyst 1900 series) 2048 or 8192 per system (Catalyst 2820 series) Unlimited MAC address support on configurable network port
Management	SNMP Management Information Base (MIB) II, SNMP MIB extensions Station Management (SMT) 7.3, FDDI MIB, Bridging MIB (RFC 1493)
Standards	IEEE 802.3x full duplex on 10BaseT and 100BaseT ports IEEE 802.3x flow control on 100BaseT ports IEEE 802.1d Spanning-Tree Protocol IEEE 802.3u 100BaseTX and 100BaseFX specifications IEEE 802.3 10BaseT specification IEEE 802.3 AUI specification ATM Forum LANE 1.0; UNI 3.0/3.1; RFC 1483
Connectors and Cabling	10 Mbps ports: RJ-45 connectors; two-pair Category 3, 4 or 5 UTP cabling; DB15 connector on AUI port 100BaseTX ports: RJ-45 connectors; two-pair Category 5 UTP cabling 100BaseFX port: SC connector, 50/125- and 62.5/125-micron multimode fiber-optic cabling[1] Management console port: RJ-45 connector Rack mount kit included 19 in. (48.26 cm) 2 RU (2820 models) or 19 in. (48.26 cm) 1RU (1900 models)
Indicators	Per-port status LEDs--Link Integrity, Disabled, Activity, and Full-Duplex indications System status LEDs--System, RPS, Module Enabled, and bandwidth utilization indications
Dimensions (H x W x D)	3.43 x 17.5 x 12.4 in. (8.76 x 44.45 x 31.5 cm)
Weight	13 lb (5.9 kg)

1. Modules ST connectors

Table 16-21: Environmental Conditions and Power Requirements

Characteristic	Description
Operating temperature	23 to 113˚F (-5 to 45˚C)
Operating relative humidity	10 to 95% noncondensing
Operating altitude	Up to 9842 ft (3000 m)

Characteristic	Description
Power consumption	110W (Catalyst 2820)
AC input voltage/frequency	90 to 127/200 to 250 VAC (auto-ranging) 50 to 60 Hz
Safety and Electromagnetic Emissions Certifications	UL 1950 CSA 22.2 No. 950 EN 60950 IEC 950 FCC Part 15 Class A, verified to Class B CE Marking EN 55022B Class B VCCI Class II

Software

For information about the Enterprise Edition Software, “Enterprise Edition Software for the Catalyst 2820 and Catalyst 1900 Series.”

Ordering Information

Ordering Information

All base units include 1 year limited return to factory warranty. Support for the Catalyst 2820 module is included with base unit service.

Product and Part Numbers

Part Numbers for the Catalyst 2820 Series

Part Description	Part Number
Catalyst 2820	
Catalyst 2820 Workgroup Switches	
24 Port Mod 10Mb switch, 2 slots, 8K MAC; Ent Ed Upgradable	WS-C2828-A
24 Port Modular 10Mb Switch 2 Slots, 8K MAC,ISL,CGMP,RMON	WS-C2828-EN
Modules for the Catalyst 2820	
1-Port 100BaseTX Module for Catalyst 2820	WS-X2811
8-Port 100BaseTX Module for Catalyst 2820	WS-X2818
1-Port 100BaseFX Module for Catalyst 2820	WS-X2821
4-Port 100BaseFX Module for Catalyst 2820	WS-X2824
FDDI UTP SAS Module for Catalyst 2820	WS-X2831
FDDI Fiber SAS Module for Catalyst 2820	WS-X2841
FDDI Fiber DAS Module for Catalyst 2820	WS-X2842
ATM 155 UTP module for Catalyst 2820 systems	WS-X2851
ATM 155 multimode fiber module for Catalyst 2820 Systems	WS-X2861
ATM 155 SM Fiber (Medium Range) Module for Catalyst 2820	WS-X2871
ATM 155 SM Fiber (Long Range) Module for Catalyst 2820	WS-X2872
Catalyst 1900/2820 EEUG Kit	
Catalyst 1900/2820 Enterprise Edition Upgrade Kit	WS-C19/28EEUG
Catalyst 1900/2820 Enterprise Edition Upgrade Kit, 10-Pack	WS-C19/28UG10
Catalyst 2820 Accessories	
Rack Mount Kit for 2RU Catalyst 2820 and 2900XL	STK-RACKMOUNT-2RU=

Services and Support

All Catalyst 2820 series switches come with a one year limited return to factory warranty that can be extended for a total of three years. SMARTnet and Comprehensive Support Packages are both available. Support options range from help desk assistance to proactive, onsite consultation. All support contracts include major Cisco IOS software updates, full access rights

to Cisco Connection Online, and 24-hour-a-day technical assistance. Contact your local sales office for further information.